

REMARKS

Claims 1-26 are pending, for which claims 1-5, 22-23, and 26 are objected to for informalities while claims 6-21, 24 and 25 are rejected. The Office notes that claims 1-5, 22-23 and 26 would be allowable if rewritten or amended to overcome the objections set forth in the Office Action. Claim 6-14, 16-21 and 24-25 would be allowable if rewritten or amended to overcome the rejections set forth in the Office Action.

Claim 4 is cancelled, claim 27 is added, and claims 1 – 3, 5 - 17, 19 - 26 have been amended. No new matter is added.

Information Disclosure Statement

Applicant notes the Office Action Summary acknowledges the Examiner's review of the Information Disclosure Statement(s) submitted on 2/18/2004.

Claim Objections

Applicant thanks the Office for providing the detailed objections and comments. The claims have been amended as suggested by the Office and Applicant believes the objection is traversed. Applicant notes that the reference to "coupled to" signals was amended as indicated herein but believes that such terminology for coupling non-physical elements or devices is acceptable but was amended for the convenience of the Office. Applicant also notes that claim 22 decoding is proper as amended and refers to the error correction decoding of the output of the low complexity multi-user detector.

Claims Rejections - 35 USC §112 First Paragraph

The first paragraph of 35 U.S.C. 112 provides:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to

enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention. [emphasis added].

This section of the statute requires that the specification include the following: (A) A written description of the invention; (B) The manner and process of making and using the invention (the enablement requirement); and (C) The best mode contemplated by the inventor of carrying out his invention. MPEP§2161

The Office rejected claim 15, which is similar to claim 5, with respect to the configuration of the de-interleavers and interleavers as failing to comply with the enablement requirement. Figure 3 of the application and the corresponding description in the specification is correct, and claims 5 and 15 have been amended accordingly. Applicant thanks the Office for this correction and believes that this rejection is traversed.

Claims Rejections - 35 USC §112 Second Paragraph

The Office rejected Claims 6-8, 10-21 and 23-24 under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. A §112 second paragraph rejection has two separate requirements, indefiniteness and failing to claim what applicant regards as the invention. With respect to indefiniteness, the "essential inquiry pertaining to this requirement is whether the claims set out and circumscribe a particular subject matter with a reasonable degree of clarity and particularity. Definiteness of claim language must be analyzed, not in a vacuum, but in light of (1) the content of the particular disclosure, (2) the teachings of the prior art, and (3) the claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made." (MPEP §2173.02).

A rejection stating that the claims fail to set forth the subject matter that the applicant regards as the invention is only appropriate where the applicant has stated that the invention is

something different from what is defined by the claims (MPEP §2172(a)). There is a presumption that the claims describe the applicant's invention, absent evidence to the contrary.

Many of the amendments relate to establishing proper antecedent basis and Applicant again thanks the Office for their attention to detail in this matter. Applicant has amended the claims to reflect not only the noted elements but also related elements that reflect similar rejected matters. Applicant requests reconsideration of the amended claims by the Office and believes that these clarifying amendments should traverse the rejection and place the application in condition for allowance.

Applicant has spent considerable time amending the claims for clarification purposes, wherein the amendments are fully supported by the filed specification. The following description is provided so that the Office can better understand the invention as presently claimed. The hybrid multi-user detector processes raw input data with received signals. The received signal typically represents transmissions from a number of users including interfering signals and can be from a single antenna or multiple antennae. A parameter estimation unit obtains information about the transmitted signals and corresponding physical channels, represented by the received input data, which is used by the subsequent MUD processing.

A high complexity MUD is coupled to the parameter estimation unit and performs a pruned tree search of received signals and processes the bits to produce a plurality of information streams that effectively reduces the number of interfering signals as known in the art. This allows the low complexity MUD to operate on a smaller number of undetermined users, thereby simplifying the processing for the low complexity MUD. There may be single or multiple iterations with the high complexity MUD.

This plurality of information streams, one stream corresponding to each of the transmitted signals is then processed by a bank of error correction decoders that are coupled to the high complexity MUD. These error correction decoders output a plurality of refined

information streams where the good symbols are indicated by high metric values and the bad symbols are indicated by low metric values as known in the art.

A low complexity MUD is coupled to the parameter estimation unit and to the bank of error correction decoders noted above, and processes the refined information streams. Since the high complexity MUD has decoded a subset of the total number of interfering signals prior to the low complexity MUD, these “known” interfering signals can be subtracted or otherwise be compensated for within the low complexity MUD. This process allows this low complexity MUD to properly function as it is best designed to do, on a moderate to low number of interfering signals.

The low complexity MUD outputs an improved information stream that is then processed by a bank of error correction decoders. These error correction decoders produce a refined-improved information stream which is fed back to the low complexity MUD in a turbo MUD processing fashion until a final condition is reached, and a final set of symbol streams is output. Various other features and embodiments are detailed in the specification.

It should be understood that the label for the high complexity error correction decoders and the low complexity error correction decoders is to distinguish between the two sets of decoders and does not imply that the decoders themselves are low complexity or high complexity.

Applicant requests reconsideration and allowance of all claims as amended herein.

Telephone Interview

If the Office has any further objections or rejections, Applicant respectfully requests the courtesy of a telephone interview to resolve any remaining issues. Applicant believes the above amendments and remarks to be fully responsive to the Office Action, thereby placing this application in condition for allowance. No new matter is added. Applicant requests speedy

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reconsideration, and further requests that Examiner contact its attorney by telephone, facsimile, or email for quickest resolution, if there are any remaining issues.

Respectfully submitted,

/Scott J. Asmus, Reg. No. 42,269/

Cus. No. 42716
Maine & Asmus
PO Box 3445
Nashua, NH 03061-3445
Tel. No. (603) 886-6100, Fax. No. (603) 886-4796
patents@maineandasmus.com

Scott J. Asmus, Reg. No. 42,269
Andrew P. Cernota, Reg. No. 52,711
Attorneys/Agents for Applicant